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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,362	10/23/2001	Thomas B. Sheridan	S1450/7000 RJK	1365

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EXAMINER
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BRODA, SAMUEL

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/001,362

Applicant(s)

SHERIDAN, THOMAS B.

Examiner

Samuel Broda

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

1. Claims 1-32 have been examined.

### *Priority*

2.1 This Application contains a claim for the benefit of priority to U.S. Provisional Application No. 60/242,614 filed 23 October 2000. Provisional Application 60/124,839 has been reviewed and priority is denied for claims 2-7, 11, 15-16, and 21 because the subject matter of these claims does not appear to meet the enablement and written description requirements of 35 U.S.C. Section 112, first paragraph. See 35 U.S.C. 119(e)(1).

2.2 Regarding claims 2-7, Provisional Application 60/124,839 does not appear to disclose motion responses greater than three degrees of freedom.

2.3 Regarding claim 11, Provisional Application 60/124,839 does not appear to disclose use of a video camera as providing input the scene generator.

2.4 Regarding claims 15-16, Provisional Application 60/124,839 does not appear to disclose presentation of views that differ in a “controlled fashion” from the actual behavior. Additionally, Provisional Application 60/124,839 does not appear to disclose response to operator control in accordance with movement represented in the environment view.

2.5 Regarding claim 21, Provisional Application 60/124,839 does not appear to disclose parameter-constraining apparatus.

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*Drawings*

3. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

*Claim Rejections - 35 U.S.C. § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

...

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.1 Claims 1-2, 4-5, 7-10, 12-15, 17-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Beskenis et al, "Integrated Display System For Low Visibility Landing and Surface Operations," NASA Publication CR-1998-208446 (July 1998).

4.2 Regarding claims 1 and 22, Beskenis et al teaches a vehicle operation simulator comprising:

a mobile vehicle operable in a natural environment having at least one vehicle control [Boeing 757 aircraft, pages 5-9];

a scene generator [computer hardware and head-down display ("HDD") software and head-up display ("HUD") software used to generate scene, page 8 9 and Fig. 4 at page 47];

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a scene display in communication with said scene generator and viewable by a vehicle operator [head-down display (“HDD”) and head-up display (“HUD”), pages 6, 12-23 and Fig. 3 at page 46];

an environment view being presented on said scene display which is created at least in part by said scene generator [Figs. 7-13 at pages 50-57]; and

wherein said mobile vehicle carries the operator and is controlled by the operator in accordance with said environment view, said mobile vehicle responding to actuation of said at least one vehicle control and said environment view responding to at least one of operation of said at least one vehicle control, operator movement, and vehicle movement [pilot operates Boeing 757 and environment view is presented to pilot based on pilot operation and movement of airplane; goal of integrated system is to “flight test a set of prototype flight deck displays that provide guidance and enhanced situational awareness to a flight crew during all operational phases of landing, roll-out, turn-off, inbound taxi, outbound taxi, and takeoff” (see page 1 paragraph 1)].

Therefore, Beskenis et al anticipates claims 1 and 22.

4.3 Regarding claims 2, 4-5, and 7 the airplane’s measurement units provide motion input corresponding to six degrees of freedom to the computer hardware used to generate the displays, using mathematical models.

4.4 Regarding claims 8-10 and 12-13, the environment view provided by the HUD is wholly composed of generated elements when the airplane is operated in zero-visibility

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conditions, and provides a composite view when the airplane is operated in positive-visibility conditions.

**4.5** Regarding claim 14, the environment view provided by the HUD inherently maintains equivalent light brightness so that the pilot can view both the natural environment and the generated scene.

**4.6** Regarding claim 15, the deceleration guidance display format including runway markers differ in a controlled fashion from the mobile vehicle because they represent fixed landmarks.

**4.7** Regarding claims 17-20, the integrated display system of Beskenis et al uses sensory input from the airplane, the airplane contains secondary controls operable by a co-pilot and can be exclusively operated by the co-pilot or in conjunction with operation by the pilot.

**4.8** Regarding claim 21, the airplane includes parameter-constraining apparatus functioning as safety apparatus to prevent low-altitude accidents.

**4.9** Regarding claim 23, this claim is anticipated by Beskenis et al using the analysis of claim 1 above.

**4.10** Regarding claim 24, this claim is anticipated by Beskenis et al using the analysis of claim 15 above.

**4.11** Regarding claim 25, this claim is anticipated by Beskenis et al using the analysis of claim 10 above.

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4.12 Regarding claim 26, this claim is anticipated by Beskenis et al using the analysis of claim 14 above.

4.13 Regarding claim 27, this claim is anticipated by Beskenis et al using the analysis of claim 8 above.

4.14 Regarding claims 28-30, these claims are anticipated by Beskenis et al using the analysis of claims 17-20 above.

4.15 Regarding claim 31, this claim is anticipated by Beskenis et al using the analysis of claim 13 above.

4.16 Regarding claim 32, this claim is anticipated by Beskenis et al using the analysis of claim 21 above.

***Claim Rejections - 35 U.S.C. § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5.1 Claims 3, 6, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beskenis et al, in view of Foxlin et al, U. S. Patent 6,474,159 (prior art supplied by Applicant).

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**5.2** Regarding claims 3, 6 and 16, the system of Beskenis et al does not appear to teach use of a head-mounted display that measure changes in position of the pilot's head (using up to six degrees of freedom) to provide input to the scene generator, with the pilot controlling the airplane in accordance with movement represented in the head-mounted display.

Foxlin et al teaches use of head mounted displays in conjunction with inertial head-tracking systems on-board moving platforms such as vehicles. See Abstract. According to Foxlin et al, such a configuration would "improve pilots' situational awareness and control capability." See column 1 lines 23-31. Additionally, such a configuration "allows the benefits of inertially-based motion tracking to be realized on moving platforms, without the head-tracking accuracy being disturbed by the unpredictable motions of the platform." See column lines 28-29.

**5.3** Regarding claims 3, 6 and 16, it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to adapt head-mounted displays using inertially-based motion tracking into the system of Beskenis et al, because the resulting combination would permit scene generation responding to the pilot's head movements with corrections made for the motion of the airplane, permitting increased situational awareness for the pilot.

**5.4** Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beskenis et al, in view of Barham et al, "The Development of a Driver Vision Support System Using Far Infrared Technology: Progress to Date on the DARWIN Project," Proceedings of the IEEE Intelligent Vehicles Symposium, pp. 545-549 (October 2000).



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5.5 Regarding claim 11, the system of Beskenis et al does not appear to teach use of a video camera capturing natural environmental elements for input to the heads-up display. However, Barham et al teaches a driver support system using a grille-mounted automotive infrared camera used as input for projection in a virtual image display. See Abstract and page 546 column 1 paragraph 4 through column 2 paragraph 2, including Fig. 1. According to Barham et al, such a system would provide enhanced visibility in darkness and bad weather conditions such as fog. See page 545 column 2 paragraph 2.

Regarding claim 11, it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to incorporate the infrared camera technology of Barham et al into the system of Beskenis et al, because the resulting system would permit pilots to more easily detect objects in front of the plane during low- or zero-visibility conditions such as fog.

### *Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. Reference to Streid, U. S. Patent 6,196,845 is cited as teaching a system for stimulating night vision goggles.

Reference to Lewis, "Better Cockpit Planned NASA to Test Onboard Tool," Cincinnati Post, page 6D (19 Oct 1999), is cited as teaching NASA research into 'synthetic vision.'

Reference to Tamura et al, "Vision and Graphics in Producing Mixed Reality Worlds," Proceedings of the 1998 IEEE and ATR Workshop on Computer Vision for Virtual Reality

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Based Human Communications, pp. 78-85 (January 1998), is cited as teaching a mixed-reality system using head mounted displays for playing air hockey in a virtual space.

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Samuel Broda, whose telephone number is (571) 272-3709. The Examiner can normally be reached on Mondays through Fridays from 8:00 AM – 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Leo Picard, can be reached at (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (571) 272-2100.



**SAMUEL BRODA, ESQ.  
PRIMARY EXAMINER**